

various cacti are included because of their peculiar character, while the tulip tree and tree of heaven recall the plantations which beautify so many German towns.

(4, 5, 6) The next three volumes of which the titles appear above are units in a series of neat brochures dealing with all branches of knowledge. The publishers are entitled to great credit for bringing out such a series at the modest price of one mark per volume, as they have enlisted competent authors to deal with the various subjects. It may, however, be suggested that some of the volumes deal with subjects of too extensive a nature to be satisfactorily compressed within the limits permitted. The account of phanerogams, a systematic compendium, prepared by Drs. E. Gilg and R. Muschler, provides a case in point. About 120 families are dealt with in as many pages, with the result that there is only a bare reference to the botanical characters of each family, while the space is occupied by a mere enumeration of the more important plants and their properties. The same criticism applies to the volume on cryptogams, in which Dr. Möbius has made good use of the space at his disposal, but it is evident that each of the four groups of algæ, fungi, mosses, or ferns might with advantage have been taken separately. The cultivation of plants in living rooms and on balconies is a subject better suited to these small volumes, on which Mr. P. Dannenberg provides an interesting and useful book, essentially German as regards the minuteness of detail. Advice is given on methods of arrangement, ornamental pots, watering, pruning, transplanting, and propagation; also a useful list is supplied of plants suitable for growing at different seasons and under different conditions. Precise, accurate, and well arranged, the book admirably fulfils its purpose.

(7) A different type of floricultural book is that issued by Messrs. Clay and Son, primarily intended to advertise their special manures. The list of contributors includes Messrs. J. Hudson, J. Douglas, J. Udale, H. J. Wright, and E. H. Jenkins, who contribute articles on fruit-culture, carnations, begonias, sweet-peas, daffodils, and lilies. Sections are devoted to vegetable cultivation, indoor gardening, rock gardens, and garden pests. The volume contains much practical information for the cultivator, and more particularly for the grower of produce.

(8) It is not very long since Dr. Cavers produced a very successful elementary botanical text-book under the title of "Plant Biology," in which he indicated the methods adopted with his classes, and outlined a large number of experiments intended to instruct the student by his own personal observation and experiment. The success of this book and of "Life-histories of Common Plants" has presumably led to the compilation of the volume now under notice, which in many respects resembles the earlier books. Physiology is made the groundwork of preliminary study and explanatory of morphology; classification is dealt with in the descriptions of selected families, and a chapter is devoted to ecology. The range of the book is very much wider than is necessary for a matriculation course, although

this is no disadvantage, as a teacher can select the portions immediately necessary. At the same time, many of the chemical and physical paragraphs might have been omitted, also the final chapter on the uses of plants. Apart from these criticisms, the book deserves the highest commendation, chiefly because the author conveys his information in a precise and well-ordered manner. The numerous experiments scattered through the text are admirably chosen to illustrate the points under discussion or observation, and for the most part require only simple apparatus.

(9) There is always a fund of originality in any book written by Prof. L. H. Bailey, and teachers will meet with not a few fresh ideas in his latest production. The opening is original, although Darwinian, that no two plants or parts are alike, that there is a struggle for life, and that the fittest survive; then follow chapters on plant societies and the plant body, after which ensues the ordinary gamut of elementary morphology, but treated in a fresh and inviting fashion. Another essential feature, also characteristic of the author's style, is the concise method of indicating facts or points without superfluous details; and finally it will be observed that the author introduces practical examples, so far as possible, as in the excellent chapter on bud propagation. The illustrations are bold, practical, and artistic. The studies in cryptogams, forming almost an appendix, do not make a very desirable addition, as they are perforce scrappy and introduce facts altogether beyond the scope of a beginner.

(10) The elementary practical book prepared by Mr. Clarke begins with external morphology and passes on to physiology, with the inclusion of chapters on soil, garden vegetation, distribution and cell structure. The experiments are collated in a separate part, and some account is given of selected flowering plants. Appendices are devoted to hints on the microscope and certain principles of chemistry and physics. It is apparent that the author has attempted to compress too much material into the book, more especially as he does not display that happy faculty of expression which combines conciseness with brevity; further, the information is somewhat ill-assorted, and there is a tendency to introduce ideas which are only partially relevant to the subject under discussion. There are also some inaccuracies, as in the use or explanation of various terms, such as pollarding, block, sucker, ivy root-tendrils and monosexual.

CLAYWORKING IN THE UNITED STATES.

History of the Clayworking Industry in the United States. By Dr. H. Ries and H. Leighton. Pp. ix+270. (New York: John Wiley and Sons; London: Chapman and Hall, Ltd., 1909.) Price 10s. 6d. net.

FEW realise the important rôle played by clay in the industries. It certainly ranks not lower than fourth in the value of its production in the mineral industries of the world, and it is only exceeded by iron and coal, and possibly copper. Very few industries, too, are not dependent in some way upon clay

products. Every advance in the quality of these products has been followed by advances in other industries. The raising of the refractory qualities of fire-bricks, for example, gives the metallurgist greater power and scope, and the success of the electro-chemical industries is to a large extent dependent upon the capability of the potter.

Considering the importance of the subject, the list of books with trustworthy information is surprisingly small. We therefore turn with pleasure to the present work, which is a history of the various branches of the clayworking industry in the United States, from the building of the brick houses by the early colonists up to the close of 1907. Consequently, there is no more than a passing reference to the very curious pottery fashioned by the aboriginal Indians. The book is compiled from statistics collected in the main by the United States Census Bureau and the United States Geological Survey. The first portion of the history is a general *résumé* of the various stages in the development of the industry through the manufacture of common bricks, glazed bricks, terracotta, tiles, and pottery. In the second portion of the work, these stages are discussed State by State.

The author can seldom be charged with diminishing the value of his facts by entangling them in the meshes of hypothesis. Statistics are given showing the yearly value of the products made in the United States, and also imported. Using the word "consumption" with its broadest connotation, it is possible to calculate from the authors' tables the approximate proportion of the total yearly consumption of "pottery" which is actually manufactured in the States. We thus obtain 57 per cent. for 1870, and 68 per cent. for 1907. The influence of the ceramic schools is said to be a "strong factor" (pp. 6-7) in the evolution of the industry. The first of these was started in Ohio in 1894, under the capable hands of Prof. E. Orton; the fifth, in Iowa, in 1907. Quoting from Mr. J. Moses' "One Hundred Years of American Commerce" (p. 53), the authors state that it was not, indeed, until the first real protection by the tariff ever accorded the potters was enacted, as a war measure, that the American maker found himself able to enter the field against the English potter. The influence of imported workmen, on whom there is no tariff, is not indicated, although we find some curious evidence pointing in that direction from Messrs. Ries and Leighton's tables. In 1897, 41 per cent. of the total china clay consumed in the States was mined there, and in 1907, 68 per cent. The remainder was imported. This might be attributed to the dearth of china clay, but the Americans have splendid clays, better, indeed, than our own. The greater probability is that the "secret" recipes of the imported workmen are compounded with raw materials from Cornwall, &c., and a mysterious virtue is supposed to reside in a recipe for an "English" body or glaze. The workmen have not always the courage and skill to adapt imported recipes to local materials. The recipe is thus master of the situation.

J. W. MELLOR.

A JOURNEY ACROSS VENEZUELA AND COLOMBIA.

The Journal of an Expedition across Venezuela and Colombia, 1906-7. An Exploration of the Route of Bolivar's Celebrated March of 1819, and of the Battlefields of Boyaca and Carabobo. By Dr. Hiram Bingham. Pp. viii+287. (New Haven, Conn.: Yale Publishing Association; London: T. Fisher Unwin, 1909.) Price 10s. net.

THE expulsion of Spanish power from the present State of Colombia was effected by Bolivar, who in the year 1819 conducted an army from near Caracas to Bogotá, across country that had been deemed to be impassable. All the saddle and pack animals, and many of the soldiers, succumbed to the hardships of the march, a distance of about 700 miles, traversed in about seven weeks. Spanish-American historians have compared this feat with the marches of Hannibal and Napoleon. Dr. Bingham, lecturer on Latin-American history at Yale, wanted to form a proper estimate of the actual obstacles that were overcome by the army of liberators, the backbone of which was the foreign legion of British veterans from the campaign of Waterloo. He therefore undertook the spirited and difficult task of following up the route of Bolivar through regions not easily visited and scantily known.

There is a regular overland route from Caracas to Bogotá which leads over the high plateau between the Central and the Eastern Cordilleras. The author and his companion, Dr. Hamilton Rice, however, went, like Bolivar, broadly speaking, parallel with this road, along the foothills of the Eastern Sierras, where they join the vast Llanos, at an average altitude of 600 feet to 700 feet above sea-level. The greater part of this route has been scantily described by but few travellers, and some districts were known locally only.

The travellers left Caracas at the beginning of January, 1906, and crossed the great Llanos with mules, and an ox-cart for the baggage. In time the cart had to be discarded. There were many rivers to cross, tropical forests, and the Llanos. These, never pleasant to traverse, were rendered more than difficult by the rains which set in about the middle of March, and continued with increasing force. The stiffest part of the journey began with the ascent to the plateau, to gain which the Paramo, a pass of 13,000 feet elevation, had to be negotiated.

For reasons only known to themselves, the travellers did not carry a tent. Consequently the diary is full of the troubles of getting accommodation in the wretched villages or occasional so-called towns, in rest houses kept by suspicious Indians or disobliging white men, often without sufficient food. The Western Venezuelanos (why are they persistently called Venezuelans in the book?), white, mixed, and brown alike, are apparently not a very prepossessing people, and local officials were, of course, worse. The Colombians seemed to be more amenable, as being less beyond the reach of civilisation.

The whole journey took 115 days, more than twice the time required by Bolivar's army. The book is adorned with numerous photographs of characteristic